(12) UK Patent Application (19) GB (11) 2 117 336 A

(21) Application No 8205129
(22) Date of filing 22 Feb 1982
(43) Application published
12 Oct 1983
(51) INT CL³
B62H 1/12
(52) Domestic classification
B7J 52A1B 59
(56) Documents cited
GB 1329748
GB 0464795
(58) Field of search
B7J
(71) Applicant
Maureen Patricia Wright,
1 Islip Place, Islip Road,
Oxford OX2 7SR
(72) Inventor
Maureen Patricia Wright
(74) Agent and/or Address for Service
Swann Elt and Company,
31 Beaumont Street,
Oxford OX1 2NP

(54) **Bicycle stabilisation**

(57) A resilient stabiliser device (10) for a bicycle, comprises:
a leg member having at least: a first leg section (11), a second leg section (12), and a third leg section (14), wherein:
(i) said first leg section is fastenable to the bicycle such that this leg section is downwardly directed by a side of the bicycle, said first leg section being substantially rigid and having at least one lower end to which is connected
(ii) a said second leg section, this section comprising at least one resilient means such that at least a portion of said second leg secion has resiliency in a plurality of rising planes;
(iii) said second or third leg section comprising at least one fixed or rotatable axis of rotation (16) transversely directed relative to the forwards direction of the bicycle, at least one rollable stabiliser member (17) for contacting ground being provided for rotation about and/or with a said transverse axis;
(iv) at least one of said first, second, and third leg sections comprises a fixed or rotatable rising axis of rotation (15) relative to which at least one said transverse axis of rotation can swivel in a plurality of directions.

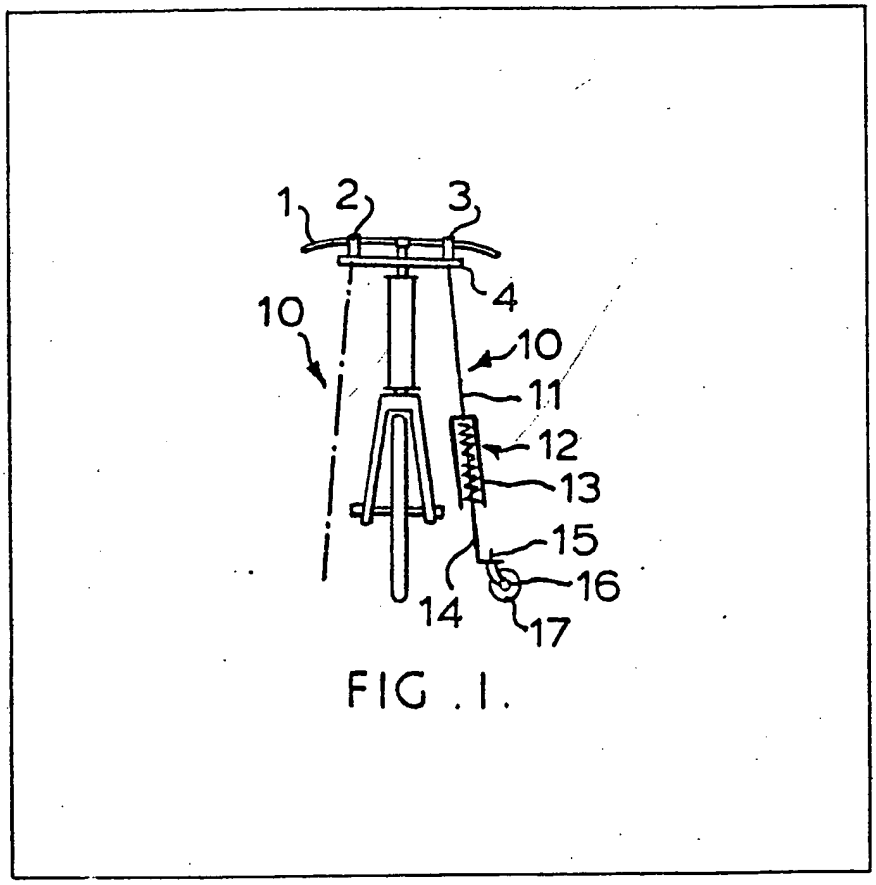

FIG. 1.

GB 2 117 336 A

The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

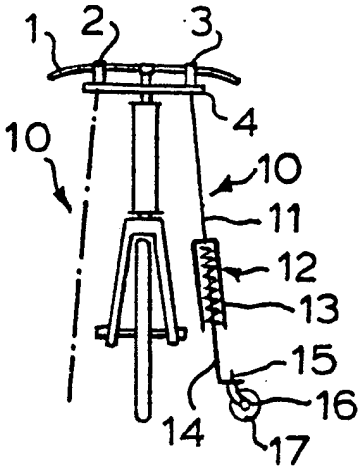

FIG . 1.

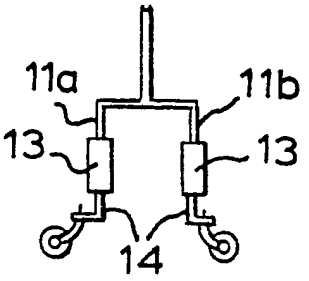

FIG . 2.

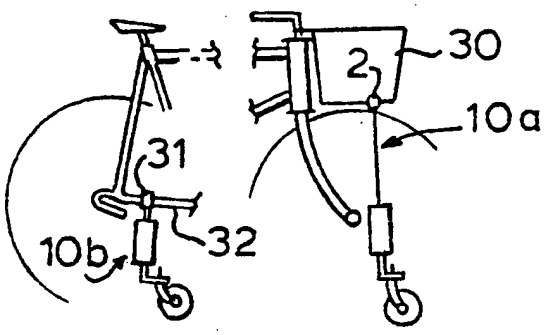

FIG . 3.

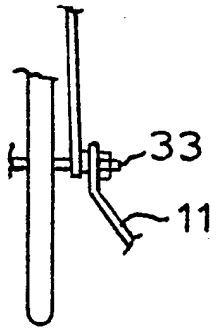

FIG. 4.

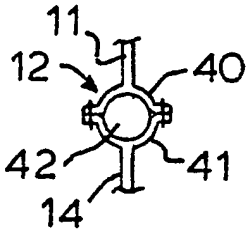

FIG. 5.

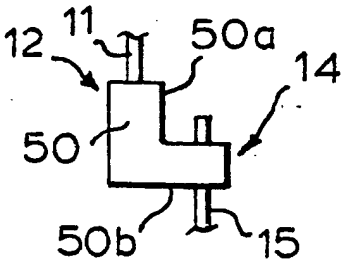

FIG. 6.

SPECIFICATION

Bicycle stabilisation

Personal transport is becoming a serious problem as fares of personal transport systems increase or public transport system are curtailed. Thus, interest is reviving in pedal bicycles as a means of personal transport. There is also interest in pedal bicycles as means of transporting goods. A further interest in pedal bicycles is as therapeutic devices for the aged or disabled or persons being rehabilitated. However, there are deterents to use of pedal bicycles. For example, a pedal bicycle can be obliged to travel over hazardous surfaces, for instance road surfaces that are not adequately maintained or have hazardous-camber or -corners. Resultant shocks can be transmitted to the bicycle's frame and to the rider. The effect of the shocks on a rider would be reduced if the bicycle's frame were suitably resilient. But, frames having useful resilient properties require special manufacture. Frames of conventional pedal bicylces are substantially less resilient than alloy frames used in costly light weight pedal bicycles. Much shock transmitted to the rider of a pedal bicycle is passed via the front forks and handlebars to the rider. Front forks of motor bicycles are provided with shock absorber devices, but commercially available pedal bicycles are not provided with shock absorber devices.

Balance of the rider of a pedal bicycle must remain sufficiently stable or the bicycle will fall onto the ground. It would be desirable if the rider were helped to maintain sufficient balance. This maintenance would assist the rider to give hand signals, and generally add to the rider's quality of ride. Children's bicycles can be provided with stabiliser devices to help the riders maintain sufficient balance. Such a device comprises a leg member whose top portion is fastened to an end of the spindle of the bicycle's rear wheel. There can be a respective said leg member for each of the opposite ends of that spindle. The lower portion of the leg member is provided with an axis of rotation for a ground contacting wheel (i.e. stabiliser wheel) fastened to the leg member. This axis is transverse to the forwards direction of the bicycle, so that the stabiliser wheel is intended to roll only in a fixed plane parallel to the forwards direction (i.e. the tracking direction) of the bicycle. The leg member is not provided with any upwardly directed axis of rotation about which the stabiliser wheel could swivel. The stabiliser wheel has a substantially smaller diameter than the rear wheel of the bicycle. Rigidity of the leg member can cause shock to be transmitted up the leg member as the stabiliser wheel enters or leaves a hazardous recess on a road's surface. It is known that a stabiliser's leg member can have some resiliency, but this resiliency is intended to be in a plane transverse to the forwards direction of the bicycle, i.e. the resiliency is intended to provide some compensation against sideways tilt of the bicycle.

A first aspect of the present invention provides cycle apparatus (preferably a pedal bicycle) having at least one resilient stabiliser device comprising:

a leg member having at least: a first leg section, a second leg section, and an optional third leg section, wherein:

(i) said first leg section is fastened to the bicycle such that this leg section is downwardly directed by a side of the bicycle, said first leg section being substantially rigid and having at least one lower end to which is connected

(ii) a said second leg section, this section comprising or constituting at least one resilient means such that at least a portion of the second section has resiliency in a plurality of rising planes (these planes can have any angular or other spacing(s) in any transverse plane relative to said first leg section), which preferably include e.g. the forwards direction of the bicycle and preferably at least one direction transverse to that forwards direction (e.g. a transverse axis of rotation defined hereinbelow);

(iii) said second or third leg section comprises or constitutes at least one fixed or rotatable axis of rotation transversely directed relative to the forwards direction of the bicycle, at least one rollable stabiliser member (preferably a ball, castor, or wheel) for contacting ground (e.g. road surface) being provided for rotation about and/or with a said transverse axis;

(iv) at least one of said first, second, and third leg sections comprises or constitutes a fixed or rotatable rising axis of rotation relative to which at least one said transverse axis of rotation can swivel in a plurality of directions (said transverse and rising axes preferably being substantially at 90° to each other, and said swivelling preferably being less than or equal to 360° in at least one transverse plane relative to said rising axis of rotation).

A second aspect of the present invention provides a resilient stabiliser device that will conform with said first aspect of the invention.

For a bicycle, at least one said resilient stabiliser device can be fastened to any suitable portion(s) of the bicycle. Examples of those portions of a pedal bicycle are: an intermediate portion of a fork of the front forks; a fork end of front forks; a spindle end of the front wheel; a head tube; an exposed post for the handlebars; a handlebar(s); a top tube; a seat tube; a chain case; an intermediate portion of a fork of the rear forks (e.g. a chainstay or seatstay); a fork end of the rear forks; a spindle end of the rear wheel; a carrier and/or support therefor, fastened to any suitable portion(s) of the bicycle so as to be mounted above or at a side of the front wheel; and a carrier and/or support therefor, fastened to any suitable portion(s) of the bicycle so as to be mounted above or at a side of the rear wheel. When a bicycle has a plurality of the resilient stabiliser devices, there could be at least one each at a respective side of the front wheel and optionally interconnected e.g. by a rigid member (e.g. top bar) fastened e.g. by at least one clamp means to

e.g. the handlebars. Clamp means and such a top bar are one example of fastener means. A further example of a fastener means is a clamp partly integral with the top of the first leg section. Any fastener m ans can be mbodied in any suitable way, and attach d to any suitable portion(s) of the bicycle.

A resilient means can be embodied in any suitable way. Examples of resilient means are: helical springs (for instance a helical spring having upper and lower ends respectively connected to the first and third leg sections); elastomeric springs (for instance suitable elastomeric shapes (e.g. a block comprising natural and/or synthetic rubber(s), the block being adapted for receiving the rising and transverse axes or rotation, or for defining at least one of those axes); gas filled springs (for instance a gas filled hollow-member); and resilient flange(s) (for instance dished, domed, or planar flanges). Any combination of at least two suitable resilient means could be utilised, e.g. an elastomeric block containing a helical spring, or resilient flange members bounding an elastomeric block and/or helical spring and/or gas filled spring.

When the second or third leg section is provided with a single said transverse axis of rotation, the rollable member is preferably disposed outwardly of that section. When the second or third leg section has a plurality of said transverse axes, at least two or those axes can be disposed at opposite sides of such a leg section. The or each said transverse axis is preferably at a height below the lower end of the rising axis. When an end (e.g. lower end) of the rising axis projects actually or notionally downwards or upwards, towards at least one transverse axis, the projection can intersect or be spaced apart from at least one said transverse axis. Preferably, that spacing exists so as to provide a castor action. A castor assembly can contain a rising axis, a transverse axis, and a rollable member. A rollable member could be a ball, roller, or wheel, or any other suitable member, and can be mounted for rotation by means of bearing(s), pivot point(s), spindle(s), or other means.

Cycle apparatus conforming to the first aspect of the invention can be used for any suitable purpose. Such apparatus would be of interest to many kinds of user, e.g. the aged, the infirm, people being rehabilitated by exercise, or road users. Tricycles or quadricycles or other kinds of "cycles" having more than two wheels or having only one wheel are known. The present invention can be utilised with any of those "cycles", for assisting learning how to use them and/or assisting with comfort of ride. Resilient stabiliser devices could be used in applications not involving rideable bicycles, e.g. could be utilised with stabilising at least a portion of any suitable v hicle, e.g. barrows or trailers. The r silient stabiliser device could be used in any suitable application.

The present invention will now be described by way of example with reference to the accompanying schematic drawings, wherein:

Fig. 1 shows a pedal bicycle having two resilient stabiliser devices.

Fig. 2 shows a modification for a portion of the or each said stabiliser device of Fig. 1.

Fig. 3 shows a further pedal bicycle having two resilient stabiliser devices similar to those of Fig. 1.

Fig. 4 shows an alternative location for mounting a resilient stabiliser device to the bicycle of Fig. 1, 2 or 3.

Fig. 5 shows alternative resilient means for a said stabiliser device.

Fig. 6 shows another alternative resilient means for a said stabiliser device.

In Fig. 1, the handlebars 1 have clamped to them two fasteners 2, 3 connected to a rigid tie bar 4 whose end portions each are provided with a resilient stabiliser device 10 (only one is shown in detail in Fig. 1) having a first leg section 11 connected to the tie bar and connected to a second leg section 12 constituted by a downwardly directed helical spring contained in an optional housing 13 open at its lower end so as to enable a third leg section 14 to have passage in that opening. The upper end of leg section 14 is connected to the spring 12. The lower end of leg section 14 contains a substantially rising axis of rotation 15 raked by any suitable angle and connected to a substantially horizontal axis of rotation 16 of a castor wheel 17. Although not shown, the lower portion of the axis 15 could be forked so that there is a respective fork connected to a respective end of the axis 16. In Fig. 2, the first leg section 11 has forks 11*a*, 11*b* each with a respective second leg section 12 and so forth corresponding to Fig. 1.

In Fig. 3, a resilient stabiliser device 10*a* is clamped by fastener 2 to a front carrier frame 30. A resilient stabiliser device 10*b* smaller than but similar to the front stabiliser device 10*a* is clamped by a fastener 31 to a chainstay 32. Fig. 4 shows such clamping to a spindle end portion 33 of the bicycle's rear or front wheel 34.

In Fig. 5, the second leg section 12 is constituted by two domed flanges 40, 41 fixed together at their edges and surrounding an oval or circular elastomeric spring 42 in the form of a block of elastomeric material.

In Fig. 6, there is shown a replacement for both the second leg section 12 and third leg section 14. The replacement is an elastomeric spring in the form of a substantially L shaped elastomeric block 50, the rising portion 50*a* of which corresponds to leg section 12 and the transverse portion 50*b* of which corresponds to leg section 14. The transverse portion 50*b* provides a mount for said rising axis 15 of rotation.

The present invention ext nds to equivalents of the accompanying drawings. It will be appreciated that the drawings could be modified in any suitable way in accordance with the description given above bef re the introduction to the drawings. For example, an axis of rotation can be constituted in any form, and can itself be rotatable or non-rotatable. At least a portion of a fastener

means can be an integral portion of the leg member's first leg section, e.g. when a portion of the upper end of the first leg section is half of a clamp. The word "rising" refers to any suitable upwardly directed angle, e.g. 90°. The word"transverse" refers to any suitabl sideways directed angle, e.g. at 90° to a vertical. A castor can be embodied in any suitable manner. For example, any rising axis 15 can be connected to or integral with at least one portion of a castor; for instance, a castor and rising axis 15 could be an assembly for connection to a leg section 14. No restriction is placed on the how any axis of rotation is embodied, other than that the embodiment must be suitable for use in the present invention.

CLAIMS

1. A resilient stabiliser device for a bicycle, said device comprising:

a leg member having at least: a first leg section, a second leg section, and an optional third leg section, wherein:

(i) said first leg section is fastenable to the bicycle such that this leg section is downwardly directed by a side of the bicycle, said first leg section being substantially rigid and having at least one lower end to which is connected

(ii) a said second leg section, this section comprising or constituting at least one resilient means such that at least a portion of said second leg section has resiliency in a plurality of rising planes;

(iii) said second or third leg section comprises or constitutes at least one fixed or rotatable axis of rotation transversely directed relative to the forwards direction of the bicycle, at least one rollable stabiliser member for contacting ground being provided for rotation about and/or with a said transverse axis;

(iv) at least one of said first, second, and third leg sections comprises or constitutes a fixed or rotatable rising axis of rotation relative to which at least one said transverse axis of rotation can swivel in a plurality of directions.

2. A device as claimed in claim 1, wherein at least one said resilient means comprises a helical spring.

3. A device as claimed in claim 1 or 2, wherein at least one resilient means comprises an elastomeric spring.

4. A device as claimed in any one of claims 1 to 3, wherein at least one said resilient means comprises a gas filled spring.

5. A device as claimed in any one of claims 1 to 4, wherein at least one said resilient means comprises a resilient flange.

6. A device as claimed in any one of claims 1 to 5, wherein at least one of said roller stabiliser members has a castor action.

7. A device as claimed in claim 6, wherein there is a castor assembly comprising a rollable stabiliser member, a rising axis of rotation of that member, and a transverse axis of rotation for that member.

8. A device as claimed in any one of claims 1 to 7, wherein at least one said rollable stabiliser member is a ball.

9. A device as claimed in any one of claims 1 to 8, wherein at least one said rollable stabiliser is a roller.

10. A device as claimed in any one of claims 1 to 9, wherein at least one said rollable stabiliser member is a wheel.

11. A device as claimed in claim 1, substantially hereinbefore as described with reference to and as shown in Fig. 1 of the accompanying drawings.

12. A device as claimed in claim 1, substantially as hereinbefore described with reference to and as shown in Fig. 2 of the accompanying drawings.

13. A device as claimed in claim 1, substantially as hereinbefore described with reference to and as shown in Fig. 3 of the accompanying drawings.

14. A device as claimed in claim 1, substantially as hereinbefore described with reference to and as shown in Fig. 4 of the accompanying drawings.

15. A device as claimed in claim 1, substantially as hereinbefore described with reference to and as shown in Fig. 5 of the accompanying drawings.

16. A device as claimed in claim 1, substantially as hereinbefore described with reference to and as shown in Fig. 6 of the accompanying drawings.

17. A bicycle provided with at least one resilient stabiliser device as claimed in any one of claims 1 to 16.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1983. Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

Stabiliser for bicycles

Patent Number: DE3728017
Publication date: 1989-03-02
Inventor(s):
Applicant(s): TRZASKA MARTIN (DE)
Requested Patent: DE3728017
Application Number: DE19873728017 19870822
Priority Number(s): DE19873728017 19870822
IPC Classification: B62H1/12; B62M3/02
EC Classification: B62H1/12
Equivalents:

Abstract

A stabiliser (10) for bicycles (11) is proposed which comprises essentially two stabiliser wheels (24, 240) fastened on a cantilever (17, 170), which project essentially on both sides of a wheel (12; 13) of the bicycle (11). The stabiliser (10) is detachably fastened on the bicycle (11). As proposed, the stabiliser (10) is formed essentially by two struts (14, 140) the one end (15, 150) of each of which is detachably connected to the upper part of the bicycle (11). The cantilevers (17, 170) are connected to the other end (16, 160) of each of the struts.